

## [Sequence Listing]

&lt;110&gt; Chugai Seiyaku Kabushiki Kaisha

&lt;120&gt; Humanized anti-CD47 antibody

&lt;130&gt; YCT-971

&lt;160&gt; 92

&lt;210&gt; 1

&lt;211&gt; 133

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;400&gt; 1

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cccaagcttc caccatggaa tggagctgga tatttcctt cctccgtgca ggaactgcag    60
gtgtccactc ccaggatgcag ctggatgcagt ctggggctga ggtgaagaag cctggggcct    120
cagtgaaggt ttc    133

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&lt;210&gt; 2

&lt;211&gt; 133

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;400&gt; 2

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ggcttgagtg gatgggatat atttatcctt acaatgatgg tactaagtat aatgagaagt    60
tcaaggacag agtcacgatg acccgggaca cgtccacgag cacagtctac atggagttga    120
gcagtcicag atc    133

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&lt;210&gt; 3

&lt;211&gt; 133

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;400&gt; 3

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tgtaaggata aatatatccc atccacitcaa gcccttgctc agggggccigt cgcacccagt    60
gaataacaig gtggcggaag gtttatccag atgccitaca ggaaaccttc actgaggccc    120
caggcttcct cac    133

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<210> 4

<211> 133

<212> DNA

<213> Artificial Sequence

<220>

<400> 4

cgcggatcca ctcaccigag gagacggiga ccagggticc ttggccccag tcgtcgtaag 60  
tatagltaacc cccctctagca caataataga cggccgigtc ctcagatcig agactgctca 120  
actccaigta gac 133

<210> 5

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<400> 5

cccaagcttc caccatggaa tgg 23

<210> 6

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<400> 6

cgcggatcca ctcaccigag gag 23

<210> 7

<211> 424

<212> DNA

<213> Mouse, Human

<400> 7

atg gaa tgg agc tgg ata ttt ctc ttc ctc ctg tca gga act gca ggt 48  
Met Glu Trp Ser Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly

gtc cac tcc cag gtg cag ctg gtg cag tct ggg gct gag gtg aag aag 96  
Val His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys

-1      1                          5                                          10

cct ggg gcc tca gtg aag gtt tcc tgt aag gca tct gga tac acc ttc 144  
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe

15                                          20                                          25

gcc aac cat gtt att cac tgg gtg cga cag gcc cct gga caa ggg ctt 192  
Ala Asn His Val Ile His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu

30                                          35                                          40                                          45

gag tgg atg gga tat att tat cct tac aat gat ggt act aag tat aat 240  
Glu Trp Met Gly Tyr Ile Tyr Pro Tyr Asn Asp Gly Thr Lys Tyr Asn

50                                          55                                          60

gag aag ttc aag gac aga gtc acg atg acc cgg gac acg tcc acg agc 288  
Glu Lys Phe Lys Asp Arg Val Thr Met Thr Arg Asp Thr Ser Thr Ser

65                                          70                                          75

aca gtc tac atg gag ttg agc agt ctg aga tct gag gac acg gcc gtc 336  
Thr Val Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val

80                                          85                                          90

tat tat tgt gct aga ggg ggt tac tat act tac gac gac tgg ggc caa 384  
Tyr Tyr Cys Ala Arg Gly Gly Tyr Tyr Thr Tyr Asp Asp Trp Gly Gln

95                                          100                                          105

gga acc ctg gtc acc gtc tcc tca ggt gag tgg atc cgc g 424  
Gly Thr Leu Val Thr Val Ser Ser

110                                          115

$\langle 210 \rangle$  8

<211> 40

## <212> DNA

### <213> Artificial Sequence

 $\langle 220 \rangle$ 

<400> 8

gacagagtica cgatgaccic agacacgtcc acgagcacag 40

<210> 9

<211> 18

## <212> DNA

### <213> Artificial Sequence

$\langle 220 \rangle$

<400> 9

ggatcatcgig actctgic 18

<210> 10

<211> 424

<212> DNA

<213> Mouse, Human

<400> 10

atg gaa tgg agc tgg ata ttt ctc ttc ctc ctg tca gga act gca ggt 48  
Met Glu Trp Ser Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly

gtc cac tcc cag gtg cag ctg gtc cag tct ggg gct gag gtg aag aag 96  
Val His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys

-1 1 5 10  
cct ggg gcc tca gtg aag gtt tcc tgt aag gca tct gga tac acc ttc 144  
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe

15 20 25  
gcc aac cat gtt att cac tgg gtg cga cag gcc cct gga caa ggg ctt 192  
Ala Asn His Val Ile His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu

30 35 40 45  
gag tgg atg gga tat att tat cct tac aat gat ggt act aag tat aat 240  
Glu Trp Met Gly Tyr Ile Tyr Pro Tyr Asn Asp Gly Thr Lys Tyr Asn

50 55 60  
gag aag ttc aag gac aga gtc acg atg acc tca gac acg tcc acg agc 288  
Glu Lys Phe Lys Asp Arg Val Thr Met Thr Ser Asp Thr Ser Thr Ser

65 70 75  
aca gtc tac atg gag ttg agc agt ctc aga tct gag gac acg gcc gtc 336  
Thr Val Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val

80 85 90  
tat tat tgt gct aga ggg ggt tac tat act tac gac gac tgg ggc caa 384  
Tyr Tyr Cys Ala Arg Gly Gly Tyr Tyr Thr Tyr Asp Asp Trp Gly Gln

95 100 105  
gga acc ctg gtc acc gtc tcc tca ggt gag tgg atc cgc g 424  
Gly Thr Leu Val Thr Val Ser Ser

110 115

<210> 11

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<400> 11

gcaatcggat acaccttcac caaccaatgtt attcactggg 40

<210> 12

<211> 18

<212> DNA

<213> Artificial Sequence

<220>

<400> 12

gaaggtagat ccagatgc 18

<210> 13

<211> 424

<212> DNA

<213> Mouse, Human

<400> 13

atg gaa tgg agc tgg ata ttt ctc ttc ctc ctg tca gga act gca ggt 48

Met Glu Trp Ser Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly

gtc cac tcc cag gtg cag ctg gtg cag tct ggg gct gag gtg aag aag 96

Val His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys

-1 1 5 10

cct ggg gcc tca gtg aag gtt tcc tgt aag gca tct gga tac acc ttc 144

Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe

15 20 25

acc aac cat gtt att cac tgg gtg cga cag gcc cct gga caa ggg ctt 192

Thr Asn His Val Ile His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu

30 35 40 45

gag tgg atg gga tat att tat cct tac aat gat ggt act aag tat aat 240

Glu Trp Met Gly Tyr Ile Tyr Pro Tyr Asn Asp Gly Thr Lys Tyr Asn

50 55 60

gag aag ttc aag gac aga gtc acg atg acc tca gac acg tcc acg agc 288  
 Glu Lys Phe Lys Asp Arg Val Thr Met Thr Ser Asp Thr Ser Thr Ser

65

70

75

aca gtc tac atg gag tlg agc agt ctc aga tct gag gac acg gcc gtc 336  
 Thr Val Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val

80

85

90

tat tat tgt gct aga ggg ggt tac tat act tac gac gac tgg ggc caa 384  
 Tyr Tyr Cys Ala Arg Gly Gly Tyr Tyr Thr Tyr Asp Asp Trp Gly Gln

95

100

105

gga acc ctg gtc acc gtc tcc tca ggt gag tgg atc cgc g 424  
 Gly Thr Leu Val Thr Val Ser Ser

110

115

&lt;210&gt; 14

&lt;211&gt; 39

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;400&gt; 14

aatgagaagt tcaaggacaa agtcacgatg acctcagac 39

&lt;210&gt; 15

&lt;211&gt; 18

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;400&gt; 15

gtccttgaac ttctcatt 18

&lt;210&gt; 16

&lt;211&gt; 424

&lt;212&gt; DNA

&lt;213&gt; Mouse, Human

&lt;400&gt; 16

atg gaa tgg agc tgg ala ttt ctc ttc ctc ctg tca gga act gca ggt 48  
 Met Glu Trp Ser Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly

gtc cac tcc cag gtg cag ctg gtg cag tct ggg gct gag gtg aag aag 96  
 Val His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys  
           -1   1                          5                          10  
 cct ggg gcc tca gtg aag gtt tcc tgt aag gca tct gga tac acc ttc 144  
 Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe  
           15                          20                          25  
 gcc aac cat gtt att cac tgg gtg cga cag gcc cct gga caa ggg ctt 192  
 Ala Asn His Val Ile His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu  
           30                          35                          40                          45  
 gag tgg atg gga tat att tat cct tac aat gat ggt act aag tat aat 240  
 Glu Trp Met Gly Tyr Ile Tyr Pro Tyr Asn Asp Gly Thr Lys Tyr Asn  
                           50                          55                          60  
 gag aag ttc aag gac aaa gtc acg atg acc tca gac acg tcc acg agc 288  
 Glu Lys Phe Lys Asp Lys Val Thr Met Thr Ser Asp Thr Ser Thr Ser  
                           65                          70                          75  
 aca gtc tac atg gag tlg agc agt ctc aga tct gag gac acg gcc gtc 336  
 Thr Val Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val  
                           80                          85                          90  
 tat tat tgt gct aga ggg ggt tac tat act tac gac gac tgg ggc caa 384  
 Tyr Tyr Cys Ala Arg Gly Gly Tyr Tyr Thr Tyr Asp Asp Trp Gly Gln  
           95                          100                          105  
 gga acc ctg gtc acc gtc tcc tca ggt gag tgg atc cgc g 424  
 Gly Thr Leu Val Thr Val Ser Ser  
           110                          115

&lt;210&gt; 17

&lt;211&gt; 39

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;400&gt; 17

ttcaaggaca gaticacgct gacctcagac acgtccacg 39

&lt;210&gt; 18

&lt;211&gt; 18

<212> DNA

<213> Artificial Sequence

<220>

<400> 18

cgigacictg tcctigaa 18

<210> 19

<211> 424

<212> DNA

<213> Mouse, Human

<400> 19

atg gaa tgg agc tgg ata ttt ctc ttc ctc ctg tca gga act gca ggt 48  
Met Glu Trp Ser Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly

gtc cac tcc cag gtg cag ctg gtg cag tct ggg gct gag gtg aag aag 96  
Val His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys

-1 1 5 10  
cct ggg gcc tca gtg aag gtt tcc tgt aag gca tct gga tac acc ttc 144  
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe

15 20 25  
gcc aac cat gtt att cac tgg gtg cga cag gcc cct gga caa ggg ctt 192  
Ala Asn His Val Ile His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu

30 35 40 45  
gag tgg atg gga tat att tat cct tac aat gat ggt act aag tat aat 240  
Glu Trp Met Gly Tyr Ile Tyr Pro Tyr Asn Asp Gly Thr Lys Tyr Asn

50 55 60  
gag aag ttc aag gac aga gtc acg ctg acc tca gac acg tcc acg agc 288  
Glu Lys Phe Lys Asp Arg Val Thr Leu Thr Ser Asp Thr Ser Thr Ser

65 70 75  
aca gtc tac atg gag ttg agc agt ctc aga tct gag gac acg gcc gtc 336  
Thr Val Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val

80 85 90  
tat tat tgt gct aga ggg ggt tac tat act tac gac gac tgg ggc caa 384  
Tyr Tyr Cys Ala Arg Gly Gly Tyr Tyr Thr Tyr Asp Asp Trp Gly Gln

95 100 105  
gga acc ctg gtc acc gtc tcc tca ggt gag tgg atc cgc g 424



Gly Thr Leu Val Thr Val Ser Ser  
110 115

<210> 20

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<400> 20

gagcagtcctc agatctgacg acacggccgt ctattatig 39

<210> 21

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<400> 21

cgtcagatct gagactgctc 20

<210> 22

<211> 424

<212> DNA

<213> Mouse, Human

<400> 22

atg gaa tgg agc tgg ata ttt ctc ttc ctc ctg tca gga act gca ggt 48  
Met Glu Trp Ser Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly

gtc cac tcc cag gtg cag ctg gtg cag tct ggg gct gag gtg aag aag 96  
Val His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys

-1 1 5 10  
cct ggg gcc tca gtg aag gtt tcc tgt aag gca tct gga tac acc ttc 144  
Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe

15 20 25  
acc aac cat gtt att cac tgg gtg cga cag gcc cct gga caa ggg ctt 192  
Thr Asn His Val Ile His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu

30

35

40

45

gag tgg atg gga tat att tat cct tac aat gat ggt act aag tat aat 240  
 Glu Trp Met Gly Tyr Ile Tyr Pro Tyr Asn Asp Gly Thr Lys Tyr Asn  
                     50                    55                    60  
 gag aag ttc aag gac aga gtc acg atg acc tca gac acg tcc acg agc 288  
 Glu Lys Phe Lys Asp Arg Val Thr Met Thr Ser Asp Thr Ser Thr Ser  
                     65                    70                    75  
 aca gtc tac atg gag ttg agc agt ctc aga tct gac gac acg gcc gtc 336  
 Thr Val Tyr Met Glu Leu Ser Ser Leu Arg Ser Asp Asp Thr Ala Val  
                     80                    85                    90  
 tat tat tgt gct aga ggg ggt tac tat act tac gac gac tgg ggc caa 384  
 Tyr Tyr Cys Ala Arg Gly Gly Tyr Tyr Thr Tyr Asp Asp Trp Gly Gln  
                     95                    100                    105  
 gga acc ctg gtc acc gtc tcc tca ggt gag tgg atc cgc g 424  
 Gly Thr Leu Val Thr Val Ser Ser  
 110                    115

<210> 23

<211> 35

<212> DNA

<213> Artificial Sequence

<220>

<400> 23

gaagcctgggg cctcagtcag gtctcctg taagg 35

<210> 24

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<400> 24

aaccatgta ttacttggt ggcacaggcc cctggacaa 39

<210> 25

<211> 43

<212> DNA

<213> Artificial Sequence

<220>

<400> 25

gatgacctca gacacgtcca tcagcacagc ctacatggag ttg 43

<210> 26

<211> 19

<212> DNA

<213> Artificial Sequence

<220>

<400> 26

cactgaggcc ccaggcttc 19

<210> 27

<211> 18

<212> DNA

<213> Artificial Sequence

<220>

<400> 27

ccagtgaata acatggtt 18

<210> 28

<211> 49

<212> DNA

<213> Artificial Sequence

<220>

<400> 28

cgcggaacca ctacactgag gagacggtga ccagggttgc ttggcccca 49

<210> 29

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<400> 29

ggacgtgtct gaggtcatcg 20

&lt;210&gt; 30

&lt;211&gt; 424

&lt;212&gt; DNA

&lt;213&gt; Mouse, Human

&lt;400&gt; 30

atg gaa tgg agc tgg ata ttt ctc ttc ctc ctg tca gga act gca ggt 48  
 Met Glu Trp Ser Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly

gtc cac tcc cag gtc cag ctg gtc cag tct ggg gct gag gtc aag aag 96  
 Val His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys

-1 1 5 10  
 cct ggg gcc tca gtc cag gtt tcc tgt aag gca tct gga tac acc ttc 144  
 Pro Gly Ala Ser Val Gln Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe

15 20 25  
 acc aac cat gtt att cac tgg ctg cga cag gcc cct gga caa ggg ctt 192  
 Thr Asn His Val Ile His Trp Leu Arg Gln Ala Pro Gly Gln Gly Leu

30 35 40 45  
 gag tgg atg gga tat att tat cct tac aat gat ggt act aag tat aat 240  
 Glu Trp Met Gly Tyr Ile Tyr Pro Tyr Asn Asp Gly Thr Lys Tyr Asn

50 55 60  
 gag aag ttc aag gac aga gtc acg atg acc tca gac acg tcc atc agc 288  
 Glu Lys Phe Lys Asp Arg Val Thr Met Thr Ser Asp Thr Ser Ile Ser

65 70 75  
 aca gcc tac atg gag ttg agc agt ctc aga tct gac gac acg gcc gtc 336  
 Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Asp Asp Thr Ala Val

80 85 90  
 tat tat tgt gct aga ggg ggt tac tat act tac gac gac tgg ggc caa 384  
 Tyr Tyr Cys Ala Arg Gly Gly Tyr Tyr Thr Tyr Asp Asp Trp Gly Gln

95 100 105  
 gca acc ctg gtc acc gtc tcc tca ggt gag tgg atc cgc g 424  
 Ala Thr Leu Val Thr Val Ser Ser

110 115

&lt;210&gt; 31

&lt;211&gt; 130

<212> DNA

<213> Artificial Sequence

<220>

<400> 31

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cccaagcttc caccatgagg ctcccigctc agctccctggg gctgctaag ctcctgggtcc   60
caggctccag tggggaigtt gtgatgactc agctccact ctccctgccc gtcacccttg   120
gacagccggc   130

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<210> 32

<211> 130

<212> DNA

<213> Artificial Sequence

<220>

<400> 130

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cagcagaggc caggccaatc tccaaggcgc ctaatttata aagtttccaa ccgattttct   60
ggtgtccag acagattcag cggcagtggg tcaggcactg attcacact gaaaatcagc   120
agggtggagg   130

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<210> 33

<211> 130

<212> DNA

<213> Artificial Sequence

<220>

<400> 33

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ggcgccttgg agattggcct ggccctcgtc gaaaccaatg taaataggtc ttccattac   60
tgtgcacaag gctcigactt gatcgcagg agatggaggc cggctgtcca agggtagcgg   120
gcagggagag   130

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<210> 34

<211> 130

<212> DNA

<213> Artificial Sequence

<220>

<400> 34

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cgcggatcca ctacgtttg atctccagct tggccccctg gccaaacgtg tacggaacat   60
gtgtactttg agagcagtaa taaactccaa catccicagc ctccaccctg ctgattttca   120

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gtgtgaaatc 130

<210> 35

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<400> 23

ccaagcttc caccaaggagg ctc 23

<210> 36

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<400> 23

cgcggatcca ctacagttag atc 23

<210> 37

<211> 412

<212>

<213>

<400> 37

atg agg ctc cct gct cag ctc ctg ggg ctg cta atg ctc tgg gtc cca 48  
Met Arg Leu Pro Ala Gln Leu Leu Gly Leu Leu Met Leu Trp Val Pro

ggc tcc agt ggg gat gtt gtg atg act cag tct cca ctc tcc ctg ccc 96  
Gly Ser Ser Gly Asp Val Val Met Thr Gln Ser Pro Leu Ser Leu Pro

                  -1   1                                  5                                  10  
gtc acc ctt gga cag ccg gcc tcc atc tcc tgc aga tca agt cag agc 144  
Val Thr Leu Gly Gln Pro Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser

                  15                                  20                                  25  
ctt gtc cac agt aat gga aag acc tat tta cat tgg ttt cag cag agg 192  
Leu Val His Ser Asn Gly Lys Thr Tyr Leu His Trp Phe Gln Gln Arg

                  30                                  35                                  40  
cca ggc caa tct cca agg cgc cta att tat aaa gtt tcc aac cga ttt 240

Pro Gly Gln Ser Pro Arg Arg Leu Ile Tyr Lys Val Ser Asn Arg Phe  
 45                      50                      55                      60  
 tct ggt gtc cca gac aga ttc agc ggc agt ggg tca ggc act gat ttc 288  
 Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe  
                     65                      70                      75  
 aca ctg aaa atc agc agg gtg gag gct gag gat gtt gga gtt tat tac 336  
 Thr Leu Lys Ile Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr  
                     80                      85                      90  
 tgc tct caa agt aca cat gtt ccg tac acg ttt ggc cag ggg acc aag 384  
 Cys Ser Gln Ser Thr His Val Pro Tyr Thr Phe Gly Gln Gly Thr Lys  
                     95                      100                      105  
 ctg gag atc aaa cgt gag tgg atc cgc g 412  
 Leu Glu Ile Lys  
 110

<210> 38  
 <211> 39  
 <212> DNA  
 <213> Artificial Sequence  
 <220>  
 <400> 38  
 ccaggccaat ctccaaggct cctaatttat aaagtttcc 39

<210> 39  
 <211> 18  
 <212> DNA  
 <213> Artificial Sequence  
 <220>  
 <400> 39  
 ccttggagat tggcctgg 18

<210> 40  
 <211> 412  
 <212> DNA  
 <213> Mouse, Human  
 <400> 40

atg agg ctc cct gct cag ctc ctg ggg ctg cta atg ctc tgg gtc cca 48  
Met Arg Leu Pro Ala Gln Leu Leu Gly Leu Leu Met Leu Trp Val Pro

ggc tcc agt ggg gat gtt gtg atg act cag tct cca ctc tcc ctg ccc 96  
Gly Ser Ser Gly Asp Val Val Met Thr Gln Ser Pro Leu Ser Leu Pro

-1 1 5 10  
gtc acc ctt gga cag ccg gcc tcc atc tcc tgc aga tca agt cag agc 144  
Val Thr Leu Gly Gln Pro Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser

15 20 25  
ctt gtg cac agt aat gga aag acc tat tta cat tgg ttt cag cag agg 192  
Leu Val His Ser Asn Gly Lys Thr Tyr Leu His Trp Phe Gln Gln Arg

30 35 40  
cca ggc caa tct cca agg ctc cta att tat aaa gtt tcc aac cga ttt 240  
Pro Gly Gln Ser Pro Arg Leu Leu Ile Tyr Lys Val Ser Asn Arg Phe

45 50 55 60  
tct ggt gtc cca gac aga ttc agc ggc agt ggg tca ggc act gat ttc 288  
Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe

65 70 75  
aca ctg aaa atc agc agg gtg gag gct gag gat gtt gga gtt tat tac 336  
Thr Leu Lys Ile Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr

80 85 90  
tgc tct caa agt aca cat gtt ccg tac acg ttt ggc cag ggg acc aag 384  
Cys Ser Gln Ser Thr His Val Pro Tyr Thr Phe Gly Gln Gly Thr Lys

95 100 105  
ctg gag atc aaa cgt gag tgg atc cgc g 412  
Leu Glu Ile Lys  
110

<210> 41

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<400> 41

gaggatgttg gagtttattt ctgctctcaa agtacacat 39



&lt;210&gt; 42

&lt;211&gt; 18.

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;400&gt; 42

ataaactcca acatccic 18

&lt;210&gt; 43

&lt;211&gt; 412

&lt;212&gt; DNA

&lt;213&gt; Mouse, Human

&lt;400&gt; 43

atg agg ctc cct gct cag ctc ctg ggg ctg cta atg ctc tgg gtc cca 48  
 Met Arg Leu Pro Ala Gln Leu Leu Gly Leu Leu Met Leu Trp Val Pro

ggc tcc agt ggg gal gtt gtg atg act cag tct cca ctc tcc ctg ccc 96  
 Gly Ser Ser Gly Asp Val Val Met Thr Gln Ser Pro Leu Ser Leu Pro

-1 1 5 10  
 gtc acc ctt gga cag ccg gcc tcc atc tcc tgc aga tca agt cag agc 144  
 Val Thr Leu Gly Gln Pro Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser

15 20 25  
 ctt gtg cac agt aat gga aag acc tat tta cat tgg ttt cag cag agg 192  
 Leu Val His Ser Asn Gly Lys Thr Tyr Leu His Trp Phe Gln Gln Arg

30 35 40  
 cca ggc caa tct cca agg cgc cta att tat aaa gtt tcc aac cga ttt 240  
 Pro Gly Gln Ser Pro Arg Arg Leu Ile Tyr Lys Val Ser Asn Arg Phe

45 50 55 60  
 tct ggt gtc cca gac aga ttc agc ggc agt ggg tca ggc act gat ttc 288  
 Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe

65 70 75  
 aca ctg aaa atc agc agg gtg gag gct gag gat gtt gga gtt tat ttc 336  
 Thr Leu Lys Ile Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Phe

80 85 90  
 tgc tct caa agt aca cat gtt ccg tac acg ttt ggc cag ggg acc aag 384  
 Cys Ser Gln Ser Thr His Val Pro Tyr Thr Phe Gly Gln Gly Thr Lys

95 100 105  
 ctg gag atc aaa cgt gag tgg atc cgc g 412  
 Leu Glu Ile Lys

110

<210> 44

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<400> 44

aagacctatt tacatiggta ccagcagagg ccaggccaa 39

<210> 45

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<400> 45

ccaatgtaaa taggtctttc 20

<210> 46

<211> 412

<212> DNA

<213> Mouse, Human

<400> 46

atg agg ctc cct gct cag ctc ctg ggg ctg cta atg ctc tgg gtc cca 48  
 Met Arg Leu Pro Ala Gln Leu Leu Gly Leu Leu Met Leu Trp Val Pro

ggc tcc agt ggg gat gtt gtg atg act cag tct cca ctc tcc ctg ccc 96  
 Gly Ser Ser Gly Asp Val Val Met Thr Gln Ser Pro Leu Ser Leu Pro

-1 1 5 10

gtc acc ctt gga cag ccg gcc tcc atc tcc tgc aga tca agt cag agc 144  
 Val Thr Leu Gly Gln Pro Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser

15

20

25

ctt gtg cac agt aat gga aag acc tat tta cat tgg tac cag cag agg 192

Leu Val His Ser Asn Gly Lys Thr Tyr Leu His Trp Tyr Gln Gln Arg  
 30 35 40  
 cca ggc caa tct cca agg cgc cta att tat aaa gtt tcc aac cga ttt 240  
 Pro Gly Gln Ser Pro Arg Arg Leu Ile Tyr Lys Val Ser Asn Arg Phe  
 45 50 55 60  
 tct ggt gtc cca gac aga ttc agc ggc agt ggg tca ggc act gat ttc 288  
 Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe  
 65 70 75  
 aca ctg aaa atc agc agg gtg gag gct gag gat gtt gga gtt tat tac 336  
 Thr Leu Lys Ile Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr  
 80 85 90  
 tgc tct caa agt aca cat gtt ccg tac acg ttt ggc cag ggg acc aag 384  
 Cys Ser Gln Ser Thr His Val Pro Tyr Thr Phe Gly Gln Gly Thr Lys  
 95 100 105  
 ctg gag atc aaa cgt gag tgg atc cgc g 412  
 Leu Glu Ile Lys  
 110

<210> 47

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<400> 47

cctattttac attggtttctg cagaggccag gccaatctc 39

<210> 48

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<400> 48

gaaaccaatg taaataggtc 20

<210> 49

<211> 412

<212> DNA

<213> Mouse, Human

<400> 49

atg agg ctc cct gct cag ctc ctg ggg ctg cta atg ctc tgg gtc cca 48  
Met Arg Leu Pro Ala Gln Leu Leu Gly Leu Leu Met Leu Trp Val Pro

ggc tcc agt ggg gat gtt gtg atg act cag tct cca ctc tcc ctg ccc 96  
Gly Ser Ser Gly Asp Val Val Met Thr Gln Ser Pro Leu Ser Leu Pro

-1 1 5 10

gtc acc ctt gga cag ccg gcc tcc atc tcc tgc aga tca agt cag agc 144  
Val Thr Leu Gly Gln Pro Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser

15 20 25

ctt gtg cac agt aat gga aag acc tat tta cat tgg ttt ctg cag agg 192  
Leu Val His Ser Asn Gly Lys Thr Tyr Leu His Trp Phe Leu Gln Arg

30 35 40

cca ggc caa tct cca agg cgc cta att tat aaa gtt tcc aac cga ttt 240  
Pro Gly Gln Ser Pro Arg Arg Leu Ile Tyr Lys Val Ser Asn Arg Phe

45 50 55 60

tct ggt gtc cca gac aga ttc agc ggc agt ggg tca ggc act gat ttc 288  
Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe

65 70 75

aca ctg aaa atc agc agg gtg gag gct gag gat gtt gga gtt tat tac 336  
Thr Leu Lys Ile Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr

80 85 90

tgc tct caa agt aca cat gtt ccg tac acg ttt ggc cag ggg acc aag 384  
Cys Ser Gln Ser Thr His Val Pro Tyr Thr Phe Gly Gln Gly Thr Lys

95 100 105

ctg gag atc aaa cgt gag tgg atc cgc g 412  
Leu Glu Ile Lys

110

<210> 50

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

&lt;400&gt; 50

cagaagccag gccagtcicc aagaticctg atctacaaag 40

&lt;210&gt; 51

&lt;211&gt; 40

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;400&gt; 51

ggagactggcc tggcttcig cagatacca tgtaaatagg 40

&lt;210&gt; 52

&lt;211&gt; 412

&lt;212&gt; DNA

&lt;213&gt; Mouse, Human

&lt;400&gt; 52

atg agg ctc cct gct cag ctc ctg ggg ctg cta atg ctc tgg gtc cca 48  
 Met Arg Leu Pro Ala Gln Leu Leu Gly Leu Leu Met Leu Trp Val Pro

ggc tcc agt ggg gat gtt gtg atg act cag tct cca ctc tcc ctg ccc 96  
 Gly Ser Ser Gly Asp Val Val Met Thr Gln Ser Pro Leu Ser Leu Pro

-1 1 5 10

gtc acc ctt gga cag ccg gcc tcc atc tcc tgc aga tca agt cag agc 144  
 Val Thr Leu Gly Gln Pro Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser

15 20 25

ctt gtg cac agt aat gga aag acc tat tta cat tgg tat ctg cag aag 192  
 Leu Val His Ser Asn Gly Lys Thr Tyr Leu His Trp Tyr Leu Gln Lys

30 35 40

cca ggc cag tct cca aga ctc ctg atc tac aaa gtt tcc aac cga ttt 240  
 Pro Gly Gln Ser Pro Arg Leu Leu Ile Tyr Lys Val Ser Asn Arg Phe

45 50 55 60

tct ggt gtc cca gac aga ttc agc ggc agt ggg tca ggc act gat ttc 288  
 Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe

65 70 75

aca ctg aaa atc agc agg gtg gag gct gag gat gtt gga gtt tat tac 336  
 Thr Leu Lys Ile Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr

80                      85                      90  
 tgc tct caa agt aca cat gtt ccg tac acg ttt ggc cag ggg acc aag 384  
 Cys Ser Gln Ser Thr His Val Pro Tyr Thr Phe Gly Gln Gly Thr Lys  
 95                      100                      105  
 ctg gag atc aaa cgt gag tgg atc cgc g 412  
 Leu Glu Ile Lys  
 110

<210> 53

<211> 54

<212> DNA

<213> Artificial Sequence

<220>

<400> 53

cagtcctccac tctccctgcc cgtcacccct ggagagccgg cctccatctc ctgc 54

<210> 54

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<400> 5

gggtggaggc tgatgatgtt ggaatttatt actgctctc 39

<210> 55

<211> 48

<212> DNA

<213> Artificial Sequence

<220>

<400> 55

cagggagagt ggagactgag icalcacaata tccccactg gagcctgg 48

<210> 56

<211> 22

<212> DNA

<213> Artificial Sequence

&lt;220&gt;

&lt;400&gt; 56

ccaacatcat cagccicccac cc 22

&lt;210&gt; 57

&lt;211&gt; 412

&lt;212&gt; DNA

&lt;213&gt; Mouse, Human

&lt;400&gt; 57

atg agg ctc cct gct cag ctc ctg ggg ctg cta atg ctc tgg gtc cca 48  
 Met Arg Leu Pro Ala Gln Leu Leu Gly Leu Leu Met Leu Trp Val Pro

ggc tcc agt ggg gat att gtg atg act cag tct cca ctc tcc ctg ccc 96  
 Gly Ser Ser Gly Asp Ile Val Met Thr Gln Ser Pro Leu Ser Leu Pro

-1 1 5 10

gtc acc cct gga gag ccg gcc tcc atc tcc tgc aga tca agt cag agc 144  
 Val Thr Pro Gly Glu Pro Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser

15 20 25

cit gtg cac agt aat gga aag acc tat tta cat tgg tat ctg cag aag 192  
 Leu Val His Ser Asn Gly Lys Thr Tyr Leu His Trp Tyr Leu Gln Lys

30 35 40

cca ggc cag tct cca aga ctc ctg atc tac aaa gtt tcc aac cga ttt 240  
 Pro Gly Gln Ser Pro Arg Leu Leu Ile Tyr Lys Val Ser Asn Arg Phe

45 50 55 60

tct ggt gtc cca gac aga ttc agc ggc agt ggg tca ggc act gat ttc 288  
 Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe

65 70 75

aca ctg aaa atc agc agg gtg gag gct gat gat gtt gga att tat tac 336  
 Thr Leu Lys Ile Ser Arg Val Glu Ala Asp Asp Val Gly Ile Tyr Tyr

80 85 90

tgc tct caa agt aca cat gtt ccg tac acg ttt ggc cag ggg acc aag 384  
 Cys Ser Gln Ser Thr His Val Pro Tyr Thr Phe Gly Gln Gly Thr Lys

95 100 105

ctg gag atc aaa cgt gag tgg atc cgc g 412  
 Leu Glu Ile Lys

110

<210> 58

<211> 38

<212> DNA

<213> Artificial Sequence

<220>

<400> 58

ccttcaccaa ccatgttatg cactggctgc gacaggcc 38

<210> 59

<211> 38

<212> DNA

<213> Artificial Sequence

<220>

<400> 59

ataatgagaa gticaagggc agagtcacga tgacctca 38

<210> 60

<211> 38

<212> DNA

<213> Artificial Sequence

<220>

<400> 60

tgctagaggg ggttactatt ctacgacga ctggggcc 38

<210> 61

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<400> 61

ataacatggt tggatgaaggt 20

<210> 62

<211> 20

<212> DNA



<213> Artificial Sequence

<220>

<400> 62

ccttgaactt ctcattatac 20

<210> 63

<211> 19

<212> DNA

<213> Artificial Sequence

<220>

<400> 63

atagtaaccc cctctagca 19

<210> 64

<211> 424

<212> DNA

<213> Mouse, Human

<400> 64

atg gaa tgg agc tgg ata ttt ctc ttc ctc ctg tca gga act gca ggt 48  
Met Glu Trp Ser Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly

gtc cac tcc cag gtg cag ctg gtg cag tct ggg gct gag gtg aag aag 96  
Val His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys

-1 1 5 10  
cct ggg gcc tca gtg cag gtt tcc tgt aag gca tct gga tac acc ttc 144  
Pro Gly Ala Ser Val Gln Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe

15 20 25  
acc aac cat gtt atg cac tgg ctg cga cag gcc cct gga caa ggg ctt 192  
Thr Asn His Val Met His Trp Leu Arg Gln Ala Pro Gly Gln Gly Leu

30 35 40 45  
gag tgg atg gga tat att tat cct tac aat gat ggt act aag tat aat 240  
Glu Trp Met Gly Tyr Ile Tyr Pro Tyr Asn Asp Gly Thr Lys Tyr Asn

50 55 60  
gag aag ttc aag ggc aga gtc acg atg acc tca gac acg tcc atc agc 288  
Glu Lys Phe Lys Gly Arg Val Thr Met Thr Ser Asp Thr Ser Ile Ser

65

70

75

aca gcc tac atg gag tgg agc agt ctc aga tct gac gac acg gcc gtc 336  
 Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Asp Asp Thr Ala Val  
           80                          85                          90  
 tat tat tgt gct aga ggg ggt tac tat tct tac gac gac tgg ggc caa 384  
 Tyr Tyr Cys Ala Arg Gly Gly Tyr Tyr Ser Tyr Asp Asp Trp Gly Gln  
           95                          100                         105  
 gca acc ctg gtc acc gtc tcc tca ggt gag tgg atc cgc g 424  
 Ala Thr Leu Val Thr Val Ser Ser  
 110                          115

<210> 65

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<400> 65

acagtaaggg aaacacctat ttacagtggg atctgcaga 39

<210> 66

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<400> 66

ataggigtgtt cccttactgt gcagaaggct ctgacttga 39

<210> 67

<211> 412

<212> DNA

<213> Mouse, Human

<400> 67

atg agg ctc cct gct cag ctc ctg ggg ctg cta atg ctc tgg gtc cca 48  
 Met Arg Leu Pro Ala Gln Leu Leu Gly Leu Leu Met Leu Trp Val Pro

ggc tcc agt ggg gat att gtg atg act cag tct cca ctc tcc ctg ccc 96  
 Gly Ser Ser Gly Asp Ile Val Met Thr Gln Ser Pro Leu Ser Leu Pro

$\langle 220 \rangle$  $\langle 220 \rangle$

<400> 69

ccaccactcg agactgigacc agggitgct tggcc 35

<210> 70

<211> 44

<212> DNA

<213> Artificial Sequence

<220>

<400> 70

cagtcicgag tggtagcgga ggticcgata ttgtagac tcag 44

<210> 71

<211> 45

<212> DNA

<213> Artificial Sequence }

<220>

<400> 71

aaaaggaaaa gcggccgctc attattgat ctccagcttg gtcccc 45

<210> 72

<211> 15

<212> DNA

<213>

<400> 72

ggt ggc gga ggt tcc 15

Gly Gly Gly Gly Ser

1

5

<210> 73

<211> 768

<212> DNA

<213> Mouse, Human

<400> 73

atg gga tgg agc tgt atc atc ctc ttc ttg gta gca aca gct aca ggt 48

Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Thr Ala Thr Gly

gic gac tcc cag gig cag ctg gtg cag tct ggg gct gag gtg aag aag 96  
Val Asp Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys  
-1 1 5 10  
ccr ggg gcc tca gtg cag gtt tcc tgt aag gca tct gga tac acc ttc 144  
Pro Gly Ala Ser Val Gln Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe  
15 20 25  
acc aac cat gtt att cac tgg ctg cga cag gcc cct gga caa ggg ctt 192  
Thr Asn His Val Ile His Trp Leu Arg Gln Ala Pro Gly Gln Gly Leu  
30 35 40 45  
gag tgg atg gga tat att tat cct tac aat gat ggt act aag tat aat 240  
Glu Trp Met Gly Tyr Ile Tyr Pro Tyr Asn Asp Gly Thr Lys Tyr Asn  
50 55 60  
gag aag ttc aag gac aga gtc acg atg acc tca gac acg tcc atc agc 288  
Glu Lys Phe Lys Asp Arg Val Thr Met Thr Ser Asp Thr Ser Ile Ser  
65 70 75  
aca gcc tac atg gag ttg agc agt ctc aga tct gac gac acg gcc gtc 336  
Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Asp Asp Thr Ala Val  
80 85 90  
tat tat tgt gct aga ggg ggt tac tat act tac gac gac tgg ggc caa 384  
Tyr Tyr Cys Ala Arg Gly Gly Tyr Tyr Thr Tyr Asp Asp Trp Gly Gln  
95 100 105  
gca acc ctg gtc aca gtc tcg agt ggt ggc gga ggt tcc gat att gtg 432  
Ala Thr Leu Val Thr Val Ser Ser Gly Gly Gly Gly Ser Asp Ile Val  
110 115 120 125  
atg act cag tct cca ctc tcc ctg ccc gtc acc cct gga gag ccg gcc 480  
Met Thr Gln Ser Pro Leu Ser Leu Pro Val Thr Pro Gly Glu Pro Ala  
130 135 140  
tcc atc tcc tgc aga tca agt cag agc ctt gtg cac agt aat gga aag 528  
Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu Val His Ser Asn Gly Lys  
145 150 155  
acc tat tta cat tgg tat ctg cag aag cca ggc cag tct cca aga ctc 576  
Thr Tyr Leu His Trp Tyr Leu Gln Lys Pro Gly Gln Ser Pro Arg Leu  
160 165 170  
ctg atc tac aaa gtt tcc aac cga ttt tct ggt gtc cca gac aga ttc 624  
Leu Ile Tyr Lys Val Ser Asn Arg Phe Ser Gly Val Pro Asp Arg Phe  
175 180 185

agc ggc agl ggg tca ggc act gat ttc aca ctg aaa atc agc agg gtg 672  
 Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile Ser Arg Val  
 190                      195                      200                      205  
 gag gct gat gat gtt gga att tat tac tgc tct caa agt aca cat gtt 720  
 Glu Ala Asp Asp Val Gly Ile Tyr Tyr Cys Ser Gln Ser Thr His Val  
                          210                      215                      220  
 ccg tac acg ttt ggc cag ggg acc aag ctg gag atc aaa taa tga gcg 768  
 Pro Tyr Thr Phe Gly Gln Gly Thr Lys Leu Glu Ile Lys  
                          225                      230

<210> 74

<211> 768

<212> DNA

<213> Mouse, Human

<400> 74

atg gga tgg agc tgt atc atc ctc ttc ttg gta gca aca gct aca ggt 48  
 Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Thr Ala Thr Gly

gtc gac tcc cag gtg cag ctg gtg cag tct ggg gct gag gtg aag aag 96  
 Val Asp Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys

                 -1    1                      5                      10

cct ggg gcc tca gtg cag gtt tcc tgt aag gca tct gga tac acc ttc 144  
 Pro Gly Ala Ser Val Gln Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe

                 15                      20                      25

acc aac cat gtt atg cac tgg ctg cga cag gcc cct gga caa ggg ctt 192  
 Thr Asn His Val Met His Trp Leu Arg Gln Ala Pro Gly Gln Gly Leu

30                      35                      40                      45

gag tgg atg gga tat att tat cct tac aat gat ggt act aag tat aat 240  
 Glu Trp Met Gly Tyr Ile Tyr Pro Tyr Asn Asp Gly Thr Lys Tyr Asn

                 50                      55                      60

gag aag ttc aag ggc aga gtc acg atg acc tca gac acg tcc atc agc 288  
 Glu Lys Phe Lys Gly Arg Val Thr Met Thr Ser Asp Thr Ser Ile Ser

                 65                      70                      75

aca gcc tac atg gag ttg agc agt ctc aga tct gac gac acg gcc gtc 336  
 Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Asp Asp Thr Ala Val

                 80                      85                      90

tat tat tgt gct aga ggg ggt tac tat tct tac gac gac tgg ggc caa 384  
 Tyr Tyr Cys Ala Arg Gly Gly Tyr Tyr Ser Tyr Asp Asp Trp Gly Gln  
           95                    100                    105  
 gca acc ctg gtc aca gtc tcg agt ggt ggc gga ggt tcc gat att gtg 432  
 Ala Thr Leu Val Thr Val Ser Ser Gly Gly Gly Gly Ser Asp Ile Val  
 110                    115                    120                    125  
 atg act cag tct cca ctc tcc ctg ccc gtc acc cct gga gag ccg gcc 480  
 Met Thr Gln Ser Pro Leu Ser Leu Pro Val Thr Pro Gly Glu Pro Ala  
                     130                    135                    140  
 tcc atc tcc tgc aga tca agt cag agc ctt ctg cac agt aag gga aac 528  
 Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu Leu His Ser Lys Gly Asn  
                     145                    150                    155  
 acc tat tta cag tgg tat ctg cag aag cca ggc cag tct cca aga ctc 576  
 Thr Tyr Leu Gln Trp Tyr Leu Gln Lys Pro Gly Gln Ser Pro Arg Leu  
                     160                    165                    170  
 ctg atc tac aaa gtt tcc aac cga ttt tct ggt gtc cca gac aga ttc 624  
 Leu Ile Tyr Lys Val Ser Asn Arg Phe Ser Gly Val Pro Asp Arg Phe  
                     175                    180                    185  
 agc ggc agt ggg tca ggc act gat ttc aca ctg aaa atc agc agg gtg 672  
 Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile Ser Arg Val  
 190                    195                    200                    205  
 gag gct gat gat gtt gga att tat tac tgc tct caa agt aca cat gtt 720  
 Glu Ala Asp Asp Val Gly Ile Tyr Tyr Cys Ser Gln Ser Thr His Val  
                     210                    215                    220  
 ccg tac acg ttt ggc cag ggg acc aag ctg gag atc aaa taa tga gcg 768  
 Pro Tyr Thr Phe Gly Gln Gly Thr Lys Leu Glu Ile Lys  
                     225                    230

<210> 75

<211> 44

<212> DNA

<213> Artificial Sequence

<220>

<400> 75

cgcggaatccg gtggtaggcgg atcgacaggtag cagctggtagc agtc 44

&lt;210&gt; 76

&lt;211&gt; 54

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;400&gt; 76

cgcggatcca ccaccacccg aaccaccacc acccttggatc tccagcttgg tccc 54

&lt;210&gt; 77

&lt;211&gt; 45

&lt;212&gt; DNA

&lt;213&gt;

&lt;400&gt; 77

ggt ggt ggt ggt tcg ggt ggt ggt gga tcc ggt ggt ggc gga tcg 45  
 Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser  
           1                  5                  10                  15

&lt;210&gt; 78

&lt;211&gt; 1515

&lt;212&gt; DNA

&lt;213&gt; Mouse, Human

&lt;400&gt; 78

atg gga tgg agc tgt atc atc ctc ttc ttg gta gca aca gct aca ggt 48  
 Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Thr Ala Thr Gly

gtc gac tcc cag gtg cag ctg gtg cag tct ggg gct gag gtg aag aag 96  
 Val Asp Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys

          -1   1                  5                  10

cct ggg gcc tca gtg cag gtt tcc tgt aag gca tct gga tac acc ttc 144  
 Pro Gly Ala Ser Val Gln Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe

          15                  20                  25

acc aac cat gtt att cac tgg ctg cga cag gcc cct gga caa ggg ctt 192  
 Thr Asn His Val Ile His Trp Leu Arg Gln Ala Pro Gly Gln Gly Leu

          30                  35                  40                  45

gag tgg atg gga tat att tat cct tac aat gat ggt act aag tat aat 240  
 Glu Trp Met Gly Tyr Ile Tyr Pro Tyr Asn Asp Gly Thr Lys Tyr Asn



50	55	60	
gag aag ttc aag gac aga gtc acg atg acc tca gac acg tcc atc agc 288			
Glu Lys Phe Lys Asp Arg Val Thr Met Thr Ser Asp Thr Ser Ile Ser			
65	70	75	
aca gcc tac atg gag tlg agc agt ctc aga tct gac gac acg gcc gtc 336			
Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Asp Asp Thr Ala Val			
80	85	90	
tat tat tgt gct aga ggg ggt tac tat act tac gac gac tgg ggc caa 384			
Tyr Tyr Cys Ala Arg Gly Gly Tyr Tyr Thr Tyr Asp Asp Trp Gly Gln			
95	100	105	
gca acc ctg gtc aca gtc tcg agt ggt ggc gga ggt tcc gat att gtg 432			
Ala Thr Leu Val Thr Val Ser Ser Gly Gly Gly Gly Ser Asp Ile Val			
110	115	120	125
atg acf cag tct cca ctc tcc ctg ccc gtc acc cct gga gag ccg gcc 480			
Met Thr Gln Ser Pro Leu Ser Leu Pro Val Thr Pro Gly Glu Pro Ala			
130	135	140	
tcc atc tcc tgc aga tca agt cag agc ctt gtg cac agt aat gga aag 528			
Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu Val His Ser Asn Gly Lys			
145	150	155	
acc tat tta cat tgg tat ctg cag aag cca ggc cag tct cca aga ctc 576			
Thr Tyr Leu His Trp Tyr Leu Gln Lys Pro Gly Gln Ser Pro Arg Leu			
160	165	170	
ctg atc tac aaa gtt tcc aac cga ttt tct ggt gtc cca gac aga ttc 624			
Leu Ile Tyr Lys Val Ser Asn Arg Phe Ser Gly Val Pro Asp Arg Phe			
175	180	185	
agc ggc agt ggg tca ggc act gat ttc aca ctg aaa atc agc agg gtg 672			
Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile Ser Arg Val			
190	195	200	205
gag gct gat gat gtt gga att tat tac tgc tct caa agt aca cat gtt 720			
Glu Ala Asp Asp Val Gly Ile Tyr Tyr Cys Ser Gln Ser Thr His Val			
210	215	220	
ccg tac acg ttt ggc cag ggg acc aag ctg gag atc aaa ggt ggt ggt 768			
Pro Tyr Thr Phe Gly Gln Gly Thr Lys Leu Glu Ile Lys Gly Gly Gly			
225	230	235	
ggt tcg ggt ggt ggt gga tcc ggt ggt ggc gga tcg cag gtg cag ctg 816			
Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gln Val Gln Leu			

240 245 250  
 gtg cag tct ggg gct gag glg aag aag cct ggg gcc tca glg cag gtt 864  
 Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala Ser Val Gln Val  
 255 260 265  
 tcc tgt aag gca tct gga tac acc ttc acc aac cat gtt att cac tgg 912  
 Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Asn His Val Ile His Trp  
 270 275 280 285  
 ctg cga cag gcc cct gga caa ggg ctt gag tgg atg gga tat att tat 960  
 Leu Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met Gly Tyr Ile Tyr  
 290 295 300  
 cct tac aat gat ggt act aag tat aat gag aag ttc aag gac aga gtc 1008  
 Pro Tyr Asn Asp Gly Thr Lys Tyr Asn Glu Lys Phe Lys Asp Arg Val  
 305 310 315  
 acg atg acc tca gac acg tcc atc agc aca gcc tac atg gag ttg agc 1056  
 Thr Met Thr Ser Asp Thr Ser Ile Ser Thr Ala Tyr Met Glu Leu Ser  
 320 325 330  
 agt ctc aga tct gac gac acg gcc gtc tat tat tgt gct aga ggg ggt 1104  
 Ser Leu Arg Ser Asp Asp Thr Ala Val Tyr Tyr Cys Ala Arg Gly Gly  
 335 340 345  
 tac tat act tac gac gac tgg ggc caa gca acc ctg gtc aca gtc tcg 1152  
 Tyr Tyr Thr Tyr Asp Asp Trp Gly Gln Ala Thr Leu Val Thr Val Ser  
 350 355 360 365  
 agt ggt ggc gga ggt tcc gat att gtg atg act cag tct cca ctc tcc 1200  
 Ser Gly Gly Gly Gly Ser Asp Ile Val Met Thr Gln Ser Pro Leu Ser  
 370 375 380  
 ctg ccc gtc acc cct gga gag ccg gcc tcc atc tcc tgc aga tca agt 1248  
 Leu Pro Val Thr Pro Gly Glu Pro Ala Ser Ile Ser Cys Arg Ser Ser  
 385 390 395  
 cag agc ctt glg cac agt aat gga aag acc tat tta cat tgg tat ctg 1296  
 Gln Ser Leu Val His Ser Asn Gly Lys Thr Tyr Leu His Trp Tyr Leu  
 400 405 410  
 cag aag cca ggc cag tct cca aga ctc ctg atc tac aaa gtt tcc aac 1344  
 Gln Lys Pro Gly Gln Ser Pro Arg Leu Leu Ile Tyr Lys Val Ser Asn  
 415 420 425  
 cga ttt tct ggt gtc cca gac aga ttc agc ggc agt ggg tca ggc act 1392  
 Arg Phe Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr

430                      435                      440                      445  
 gat ttc aca ctg aaa atc agc agg gtg gag gct gat gat gtt gga att 1440  
 Asp Phe Thr Leu Lys Ile Ser Arg Val Glu Ala Asp Asp Val Gly Ile  
                     450                      455                      460  
 tat tac tgc tct caa agt aca cat gtt ccg tac acg ttt ggc cag ggg 1488  
 Tyr Tyr Cys Ser Gln Ser Thr His Val Pro Tyr Thr Phe Gly Gln Gly  
                     465                      470                      475  
 acc aag ctg gag atc aaa taa tga gcg 1515  
 Thr Lys Leu Glu Ile Lys  
                     480

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<211> 1515

<212> DNA

<213> Mouse, Human

<400> 79

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 Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Thr Ala Thr Gly

gtc gac tcc cag gtg cag ctg gtg cag tct ggg gct gag gtg aag aag 96  
 Val Asp Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys

                    -1      1                      5                      10  
 cct ggg gcc tca gtg cag gtt tcc tgt aag gca tct gga tac acc ttc 144  
 Pro Gly Ala Ser Val Gln Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe

                    15                      20                      25  
 acc aac cat gtt atg cac tgg ctg cga cag gcc cct gga caa ggg ctt 192  
 Thr Asn His Val Met His Trp Leu Arg Gln Ala Pro Gly Gln Gly Leu

30                      35                      40                      45  
 gag tgg atg gga tat att tat cct tac aat gat ggt act aag tat aat 240  
 Glu Trp Met Gly Tyr Ile Tyr Pro Tyr Asn Asp Gly Thr Lys Tyr Asn

                    50                      55                      60  
 gag aag ttc aag ggc aga gtc acg atg acc tca gac acg tcc atc agc 288  
 Glu Lys Phe Lys Gly Arg Val Thr Met Thr Ser Asp Thr Ser Ile Ser

                    65                      70                      75  
 aca gcc tac atg gag ttg agc agt ctc aga tct gac gac acg gcc gtc 336  
 Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Asp Asp Thr Ala Val

80	85	90	
tat tat tgt gct aga ggg ggt tac tat tct tac gac gac tgg ggc caa	384		
Tyr Tyr Cys Ala Arg Gly Gly Tyr Tyr Ser Tyr Asp Asp Trp Gly Gln			
95	100	105	
gca acc ctg gtc aca gtc tcg agt ggt ggc gga ggt tcc gat att gtg	432		
Ala Thr Leu Val Thr Val Ser Ser Gly Gly Gly Gly Ser Asp Ile Val			
110	115	120	125
atg act cag tct cca ctc tcc ctg ccc gtc acc cct gga gag ccg gcc	480		
Met Thr Gln Ser Pro Leu Ser Leu Pro Val Thr Pro Gly Glu Pro Ala			
130	135	140	
tcc atc tcc tgc aga tca agt cag agc ctt ctg cac agt aag gga aac	528		
Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu Leu His Ser Lys Gly Asn			
145	150	155	
acc tat tta cag tgg tat ctg cag aag cca ggc cag tct cca aga ctc	576		
Thr Tyr Leu Gln Trp Tyr Leu Gln Lys Pro Gly Gln Ser Pro Arg Leu			
160	165	170	
ctg atc tac aaa gtt tcc aac cga ttt tct ggt gtc cca gac aga ttc	624		
Leu Ile Tyr Lys Val Ser Asn Arg Phe Ser Gly Val Pro Asp Arg Phe			
175	180	185	
agc ggc agt ggg tca ggc act gat ttc aca ctg aaa atc agc agg gtg	672		
Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile Ser Arg Val			
190	195	200	205
gag gct gat gat gtt gga att tat tac tgc tct caa agt aca cat gtt	720		
Glu Ala Asp Asp Val Gly Ile Tyr Tyr Cys Ser Gln Ser Thr His Val			
210	215	220	
ccg tac acg ttt ggc cag ggg acc aag ctg gag atc aaa ggt ggt ggt	768		
Pro Tyr Thr Phe Gly Gln Gly Thr Lys Leu Glu Ile Lys Gly Gly Gly			
225	230	235	
ggt tcg ggt ggt ggt gga tcc ggt ggt ggc gga tcg cag gtg cag ctg	816		
Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gln Val Gln Leu			
240	245	250	
gtg cag tct ggg gct gag gtg aag aag cct ggg gcc tca gtg cag gtt	864		
Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala Ser Val Gln Val			
255	260	265	
tcc tgt aag gca tct gga tac acc ttc acc aac cat gtt atg cac tgg	912		
Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Asn His Val Met His Trp			

270                      275                      280                      285  
 ctg cga cag gcc cct gga caa ggg ctt gag tgg atg gga tat att tat 960  
 Leu Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met Gly Tyr Ile Tyr  
                     290                      295                      300  
 cct tac aat gat ggt act aag tat aat gag aag ttc aag ggc aga gtc 1008  
 Pro Tyr Asn Asp Gly Thr Lys Tyr Asn Glu Lys Phe Lys Gly Arg Val  
                     305                      310                      315  
 acg atg acc tca gac acg tcc atc agc aca gcc tac atg gag ttg agc 1056  
 Thr Met Thr Ser Asp Thr Ser Ile Ser Thr Ala Tyr Met Glu Leu Ser  
                     320                      325                      330  
 agt ctg aga tct gac gac acg gcc gtc tat tat tgt gct aga ggg ggt 1104  
 Ser Leu Arg Ser Asp Asp Thr Ala Val Tyr Tyr Cys Ala Arg Gly Gly  
                     335                      340                      345  
 tac tat tct tac gac gac tgg ggc caa gca acc ctg gtc aca gtc tgc 1152  
 Tyr Tyr Ser Tyr Asp Asp Trp Gly Gln Ala Thr Leu Val Thr Val Ser  
 350                      355                      360                      365  
 agt ggt ggc gga ggt tcc gat att gtg atg act cag tct cca ctg tcc 1200  
 Ser Gly Gly Gly Gly Ser Asp Ile Val Met Thr Gln Ser Pro Leu Ser  
                     370                      375                      380  
 ctg ccc gtc acc cct gga gag ccg gcc tcc atc tcc tgc aga tca agt 1248  
 Leu Pro Val Thr Pro Gly Glu Pro Ala Ser Ile Ser Cys Arg Ser Ser  
                     385                      390                      395  
 cag agc ctt ctg cac agt aag gga aac acc tat tta cag tgg tat ctg 1296  
 Gln Ser Leu Leu His Ser Lys Gly Asn Thr Tyr Leu Gln Trp Tyr Leu  
                     400                      405                      410  
 cag aag cca ggc cag tct cca aga ctg atc tac aaa gtt tcc aac 1344  
 Gln Lys Pro Gly Gln Ser Pro Arg Leu Leu Ile Tyr Lys Val Ser Asn  
                     415                      420                      425                      430  
 cga ttt tct ggt gtc cca gac aga ttc agc ggc agt ggg tca ggc act 1392  
 Arg Phe Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr  
                     435                      440                      445  
 gat ttc aca ctg aaa atc agc agg gtg gag gct gat gat gtt gga att 1440  
 Asp Phe Thr Leu Lys Ile Ser Arg Val Glu Ala Asp Asp Val Gly Ile  
                     450                      455                      460  
 tat tac tgc tct caa agt aca cat gtt ccg tac acg ttt ggc cag ggg 1488  
 Tyr Tyr Cys Ser Gln Ser Thr His Val Pro Tyr Thr Phe Gly Gln Gly

465                      470                      475  
 acc aag ctg gag atc aaa taa tga gcg 1515  
 Thr Lys Leu Glu Ile Lys  
 480

<210> 80

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<400> 80

ctcgaggaat tcccaccaig ggaaggagct gtaatcatcc 39

<210> 81

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<400> 81

gggggccigt cgcagccagt gaataac 27

<210> 82

<211> 45

<212> DNA

<213> Artificial Sequence

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<400> 82

gggcagtcag tgtatacggc cgtgicgta gatctgagac tgcic 45

<210> 83

<211> 35

<212> DNA

<213> Artificial Sequence

<220>

<400> 83

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<210> 84

<211> 54

<212> DNA

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<211> 68

<212> DNA

<213> Artificial Sequence

<220>

<400> 85

tactattgig ctagaggggg ttactatact tacgacgact ggggctgcgc aaccctggic 60  
acagtc 68

<210> 86

<211> 35

<212> DNA

<213> Artificial Sequence

<220>

<400> 86

gggcttctgc agataccaat gtaaataggt ctctc 35

<210> 87

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<400> 87

gggcagtgcc caagactcct galciacaaa gtiicc

<210> 88

<211> 37

<212> DNA

<213> Artificial Sequence

<220>

<400> 88

tcattatttg atctcaagct tggccccig gccaaac

<210> 89

<211> 708

<212> DNA

<213>

<400> 89

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caggtgcagc tggcgcagtc tggggctgag gigaagaagc ctggggccic agtgcaggtt      60
tccgtgaagg catciggata caccttcacc aaccaigta ttcactggct gcgacaggcc      120
cccgggcaat gccctgagtg gatgggatat atttatccctt acaatgatgg tactaaglat      180
aatgagaagt tcaaggacag agtcacgatg acctcagaca cgtccatcag cacagcciac      240
atggagttag gcagctcag atctgacgac acggccgtct attattgtgc tagagggggt      300
tactatactt acgacgacig gggccaagca accciggta cagctcagag tggtagcgga      360
ggticcgata ttgtgatgac tcagcticca ctctccctgc ccgtcacccc tggagagccg      420
gccccaatct cctgcagatc aagtcagagc ctgtgcaca gtaatggaaa gacctatita      480
catlgttate tgcagaagcc aggccagctt ccaagactcc tgaatcaca agttccaac      540
cgattttctg ggtgccaga cagattcagc ggcagtgggt caggcactga tticacactg      600
aaaatcagca gggtaggagc tgaatgatgt ggaatttatt actgcctca aagtaacat      660
gttccgtaca cgttggcig cgggaccaag cttagatca aataatga

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<210> 90

<211> 234

<212> PRT

<213>

<400> 90

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Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
 1             5             10            15
Ser Val Gln Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Asn His
      20             25            30
Val Ile His Trp Leu Arg Gln Ala Pro Gly Gln Cys Leu Glu Trp Met
      35             40            45

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Gly Tyr Ile Tyr Pro Tyr Asn Asp Gly Thr Lys Tyr Asn Glu Lys Phe  
 50 55 60  
 Lys Asp Arg Val Thr Met Thr Ser Asp Thr Ser Ile Ser Thr Ala Tyr  
 65 70 75 80  
 Met Glu Leu Ser Ser Leu Arg Ser Asp Asp Thr Ala Val Tyr Tyr Cys  
 85 90 95  
 Ala Arg Gly Gly Tyr Tyr Thr Tyr Asp Asp Trp Gly Gln Ala Thr Leu  
 100 105 110  
 Val Thr Val Ser Ser Gly Gly Gly Gly Ser Asp Ile Val Met Thr Gln  
 115 120 125  
 Ser Pro Leu Ser Leu Pro Val Thr Pro Gly Glu Pro Ala Ser Ile Ser  
 130 135 140  
 Cys Arg Ser Ser Gln Ser Leu Val His Ser Asn Gly Lys Thr Tyr Leu  
 145 150 155 160  
 His Trp Tyr Leu Gln Lys Pro Gly Gln Ser Pro Arg Leu Leu Ile Tyr  
 165 170 175  
 Lys Val Ser Asn Arg Phe Ser Gly Val Pro Asp Arg Phe Ser Gly Ser  
 180 185 190  
 Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile Ser Arg Val Glu Ala Asp  
 195 200 205  
 Asp Val Gly Ile Tyr Tyr Cys Ser Gln Ser Thr His Val Pro Tyr Thr  
 210 215 220  
 Phe Gly Cys Gly Thr Lys Leu Glu Ile Lys  
 225 230

&lt;210&gt; 91

&lt;211&gt; 708

&lt;212&gt; DNA

&lt;213&gt;

&lt;400&gt; 91

caggatgcagc tggatgcagc tggggctgag gtgaagaagc ctggggccctc agtgcaggtt 60  
 tccgtgaagg catctggata caccttcacc aacctgttta ttacatggct gcgacaggcc 120  
 cctgggcaag ggcttgagtg gatgggatat atttatccctt acaatgatgg tactaagiat 180  
 aatgagaagt tcaaggacag agtcacgatg accicagaca cgtccatcag cacagcciac 240  
 atggagttga gcagctcag atcigacgac acggccgat actattgtgc tagagggggt 300  
 tactatactt acgacgactg gggctgcgca accctgggtca cagtcctcgag tggatggcgga 360

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ggttccgata ttgtaigac tcagtttcca ctctccctgc ccgtacccc tggagagccg 420
gccccaatct ccgtcagatc aagtcagagc ctgtgcaca gtaatggaaa gacctatcta 480
catlgttatc tgcagaagcc cgggcagtc ccaagactcc tgaatctaaa agtttccaac 540
cgattttctg ggttcccaga cagattcagc ggcagtggtt caggcacatga ttacacacig 600
aaaatcagca ggggtggaggc tgaatgatgtt ggaatttatt actgctctca aagtaacat 660
gttccgtaca cgttggcca ggggaccaag cttagatca aataatga

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&lt;210&gt; 92

&lt;211&gt; 234

&lt;212&gt; PRT

&lt;213&gt;

&lt;400&gt; 92

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Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
      5              10              15
Ser Val Gln Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Asn His
      20              25              30
Val Ile His Trp Leu Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met
      35              40              45
Gly Tyr Ile Tyr Pro Tyr Asn Asp Gly Thr Lys Tyr Asn Glu Lys Phe
      50              55              60
Lys Asp Arg Val Thr Met Thr Ser Asp Thr Ser Ile Ser Thr Ala Tyr
      65              70              75              80
Met Glu Leu Ser Ser Leu Arg Ser Asp Asp Thr Ala Val Tyr Tyr Cys
      85              90              95
Ala Arg Gly Gly Tyr Tyr Thr Tyr Asp Asp Trp Gly Cys Ala Thr Leu
      100             105             110
Val Thr Val Ser Ser Gly Gly Gly Gly Ser Asp Ile Val Met Thr Gln
      115             120             125
Ser Pro Leu Ser Leu Pro Val Thr Pro Gly Glu Pro Ala Ser Ile Ser
      130             135             140
Cys Arg Ser Ser Gln Ser Leu Val His Ser Asn Gly Lys Thr Tyr Leu
      145             150             155             160
His Trp Tyr Leu Gln Lys Pro Gly Gln Cys Pro Arg Leu Leu Ile Tyr
      165             170             175
Lys Val Ser Asn Arg Phe Ser Gly Val Pro Asp Arg Phe Ser Gly Ser
      180             185             190

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Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile Ser Arg Val Glu Ala Asp  
195 200 205  
Asp Val Gly Ile Tyr Tyr Cys Ser Gln Ser Thr His Val Pro Tyr Thr  
210 215 220  
Phe Gly Gln Gly Thr Lys Leu Glu Ile Lys  
225 230